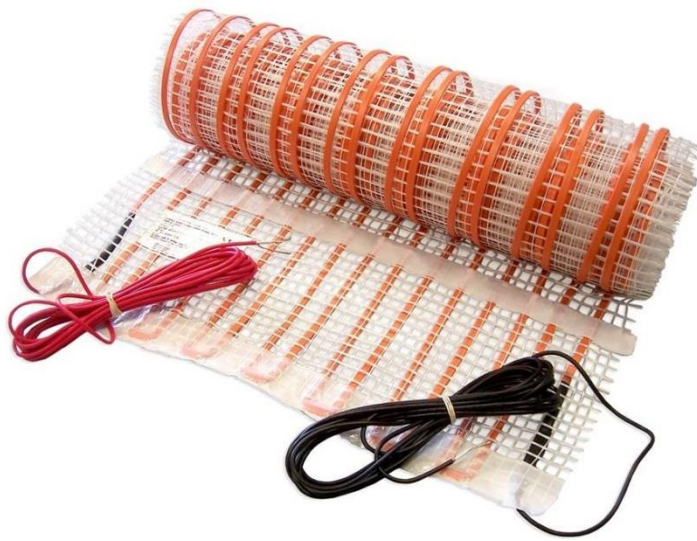


FloorHeat™

Installation Manual



**Transforming frosty floor
surfaces into radiant warmth**

Transforming frosty floor surfaces into radiant warmth

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Important Instructions!

- Do not install the heating mats before reading carefully this installation manual.
INSTALL ONLY IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (NFPA 70) ARTICLE 424IX.
- Use this product only on a dedicated circuit protected by a GFCI (Ground Fault Circuit Interrupter) or with a thermostat with a built in GFCI.
- Never install this product anywhere except inside buildings and cover with a permanently installed floor covering.
- All electrical connections must be performed by a fully qualified electrician
- The heating system is grounded. Always connect the ground cable from the mat's ribbon to the house grounding system, and follow all electrical safety regulations.
- NEVER install or use this product under walls, partitions, furniture with zero (0) (no) clearance toilets, sinks, or tubs. While planning the layout of the heating system consideration should be given regarding the future position of: these objects, and NEVER install the product in places where any of the above might be installed in the future.
- **Incorrect installation could cause damage to the heating mats or connections and will immediately invalidate the Warranty.**

Safety Instructions:



INSTALLATION

- FloorHeat™ heating mats should be installed only by qualified personnel who are familiar with the construction and operation of the apparatus and the risk involved.
- The installation of this heating product shall be in accordance with the manufacturer's instructions and the regulations of the authority having jurisdiction.

Note: Refers to US and Canada: The installation shall be made in accordance with Article 424, Part J, of the National Electrical Code, ANSI/NFPA 70 and the applicable sections of Canadian Electrical Code, C22.1.



HIGH VOLTAGE

Disconnect the heating mats from the power line before any adjustment. Maintenance should be done only while heating mats are disconnected from the power source, and should only be performed by qualified personnel.



LINE VOLTAGE

Before connecting the product to the power supply, make sure that the voltage of the power source matches the requirements of the product, as marked on the FloorHeat™ label located near the product's power connectors.



WIRING

- All electrical connections must be performed by a fully qualified electrician and in accordance with each country's NEC (National Electrical Code). Make sure that all conductor sizes are at least 14AWG.
- The connection of the cold leads must be made inside the electrical connection box. Connect all units in parallel making sure not to exceed the current handling capacity of the supply line.
- The heating system should be connected to its own circuit of the power supply.



IMPORTANT!

WARNING! RISK OF ELECTRIC SHOCK AND FIRE. DAMAGE TO SUPPLY CONDUCTOR INSULATION MAY OCCUR IF CONDUCTORS ARE ROUTED LESS THAN 50 MM (2 INCHES) FROM THIS HEATING PRODUCT.

REFER TO INSTALLATION INSTRUCTIONS FOR RECOMMENDED MEANS OF ROUTING SUPPLY CONDUCTORS.

Before Starting:

Before installing the heating mats make sure that you have the following additional parts:

- **Electrical junction box:** To be used as the connecting junction for the cold leads of the heating mats
- Installation shall be made in accordance with National Electrical Code, NFPA-70. Final acceptance is to be determined by authorities having jurisdiction.

Always Remember to Take the Following Precautions During the Installation Process:

- **Ensure that:** the electric circuit that supplies electricity to the heating mats is equipped with a type A ground fault current interrupter (GFCI).
- **Ensure that:** the total current needed for all the heating mats connected in parallel is not more than 80% of the listed amperage capacity of the relevant electrical breaker. If you need advice consult your installer / supplier.
- **Ensure that:** you have provided each room equipped with the heating mats with its own electrical junction box and its own control thermostat. Each thermostat has a maximum capacity of 16 Amps. If the amount of Amps in the room is greater than 16 Amps, divide the amperage over several thermostats, or add a dedicated contactor between the mats and the thermostats as shown in the Wiring diagram.
- **Ensure that:** all cold wires leads of the heating mats should be connected in parallel into an electrical junction box or boxes.
- **Always:** connect the grounding cable from the mat to the house grounding system.
- **Follow the electricity safety regulation in your county.**
- **Ensure that:** the thin set/cement/ glue / grout is completely dry before operating the system. Drying period is generally 2-14 days depending on the cement / glue / grout manufacturer's instructions.

NEVER:

- **NEVER** fold or wrinkle the heating mats.
- **NEVER** overlap heating on top of each other.
- **NEVER** place heavy or sharp tools, or other potentially damaging objects on top of the heating mats.
- **NEVER install or use this product under walls or partitions.**
- **NEVER** install electrical cables or pipes in the floor together with the heating system.
- **NEVER** use insulation layer which contains cellulose.
- **NEVER** connect any other electrical appliance on the same circuit
- **NEVER** install mats when the room temperature is below 0°C (32°F).
- **NEVER** install mats within 2 inches of any other heat conductor in the apartment or in the building.
- **NEVER** install mats within 2 inches of one another, 4 inches of any wall, or 6 inches of a fireplace, chimney or hot water pipes.
- **NEVER** install heating mats under wooden floor if the wooden floor is thicker than 3/4 inch.
- **NEVER** use any type of insulation material on top of the heating mats.
- **NEVER** install under carpet with thermal resistance greater than R-5
- **NEVER** step unnecessarily on the heating mats even when they are not connected to the electricity.

Planning the Installation:

Before installation, draw an installation plan. Remember to include in your plan: the placement of the mats, the floor sensor, the placement of the thermostat and junction box or boxes (See example on page 16).

The heating mats should cover at least 75%-80% of the floor area of your room to be used as a primary heat source; FloorHeat™ heating mats are available in several convenient sizes. Choose the combination of heating mats that best enables you to cover the recommended area of your room. Plan to use the larger heating mats as much as possible and to use smaller mats only as gap fillers. The more coverage the less time needed to heat the area (but never under walls, heavy cabinets, closets, or fixtures such as toilets, sinks or tubs).

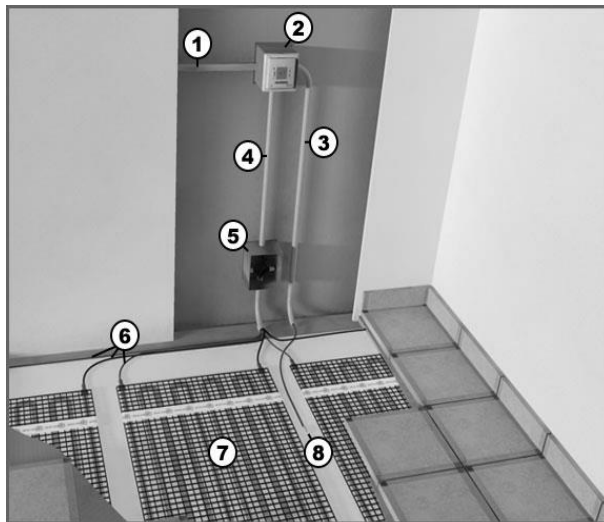
Mats are to be embedded in at least 3/8" thin set or self-leveling mortar.

Laying Out the Heating Mats

1. **Floor Base:** Make sure that the floor is completely clean of all debris or any other materials.
2. **Laying the Mats:** Open the heating mats. Roll them on top of the insulating material.
3. When using FloorHeat™ it is recommended to leave a gap of approximately 4 inches from the wall to the heating mats, and a gap of about 2 inches between each mat.
4. **Ensure that** each heating mat is completely flat.
5. **Ensure that** the cold leads of the mats are on the side closest to the electrical junction box location (See also –Making the Electrical Connection).
6. **Note:** Where required, additional adhesive tape can be used to secure the mats to the floor.
7. **Cold Leads:** Place the cold leads of the mats between the mats pointing toward the junction box. Place the cold leads so that they do not cross each other.

Since the cold lead connector is slightly thicker than the rest of the mat, create a slight groove in the insulation board under the connector to ensure that the heating mat lays flat. If any cold leads cross, create a groove for the cold leads at the point at which they cross.

Mark each pair of cold leads coming from the same mat with a number. Place a small sticker with the number of each pair of leads close to the free end of the lead.



IMPORTANT! Ensure that the cold leads do not cross over the mat.

1. Power supply
2. Thermostat
3. Electric conduit for the floor sensor wire
4. Electric conduit for the electric wire
5. Electric cold lead
6. Heating mat
7. Floor sensor installed between the mats

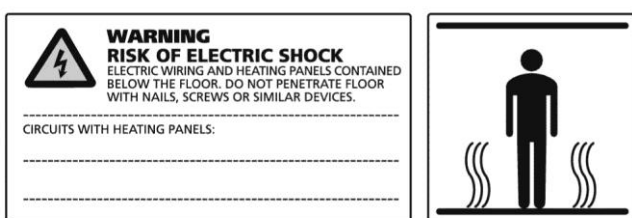
Electrical Connections

Note: All electrical connections must be performed by a fully qualified electrician and in accordance with each country's NEC (National Electrical Code).

Note: Make sure that all conductor sizes are at least 14AWG.

IMPORTANT! Tightly screw all connections to ensure good electrical contacts.

1. Install the electrical junction box or boxes, above floor level according to the local safety and building regulations and codes. Place the following label or similar in the electrical cabinet (service entrance panel) indicating that an under floor heating system is installed in the room.



2. Install the control thermostat as far as possible from any heat sources or heat sinks such as fireplaces, chimneys, direct sunlight, windows, doors, or anything that could possibly affect proper temperature readings. The suggested height for placement is 1.5m (5 feet) above floor level.
3. Install an electric conduit to the thermostat box as shown on the diagram.
 1. Thermostat
 2. Junction box is not necessary in North America.

IMPORTANT! Make sure that the sensor does Not touch any of the heating ribbons.

4. Measure the resistance of the heating mat / system and record the value (See page 13). Make sure the measured values are adequate for the resistance values that are printed on the specific mat nameplate.
5. To ensure there are no grounding issues that will trip the GFCI we recommend the use of a Megger tester. If you do not have a Megger tester, then check the ohm readings of the each cold lead with the ground wire. If it reads zero (0) there is no ground and you may proceed with the installation. If there is an ohm reading in this case, the mat is damaged and must not be installed. You will have to replace it.



6. Feed the cold leads of each mat into the thermostat box. We suggest you mark each cold lead with a number that corresponds to its mat. That way if there is ever a problem, you can easily identify which mat it is. Make sure that you can see your label. Do not remove any labels that maybe on the cold leads.

-Connect all leads of the same color.

-Connect the ground wire from the mat to the ground lead wire (green) of the house via a UL approved conduit. Install and verify the following:

- Black wire from the thermostat
- Red wire (white wire for a 120V system) from the thermostat
- Floor sensor wire from the thermostat
- Black cold leads from the heating mats
- Red cold leads (white cold leads for 12V) from the heating mats
- Green wire for grounding

7. You should record and we suggest making a floor plan diagram that includes all the installed heating mats, their specific location in the room and the numbers of the related cold leads.

8. Connect the wires to the control thermostat according to the wiring diagram on page 11.

9. Switch ON the heating system (see the directions in your thermostat manual) for half an hour to ensure that the system is working properly. It is important to check each circuit system to ensure that each mat is heating.

10. Switch OFF the heating system (see the directions in your thermostat manual).

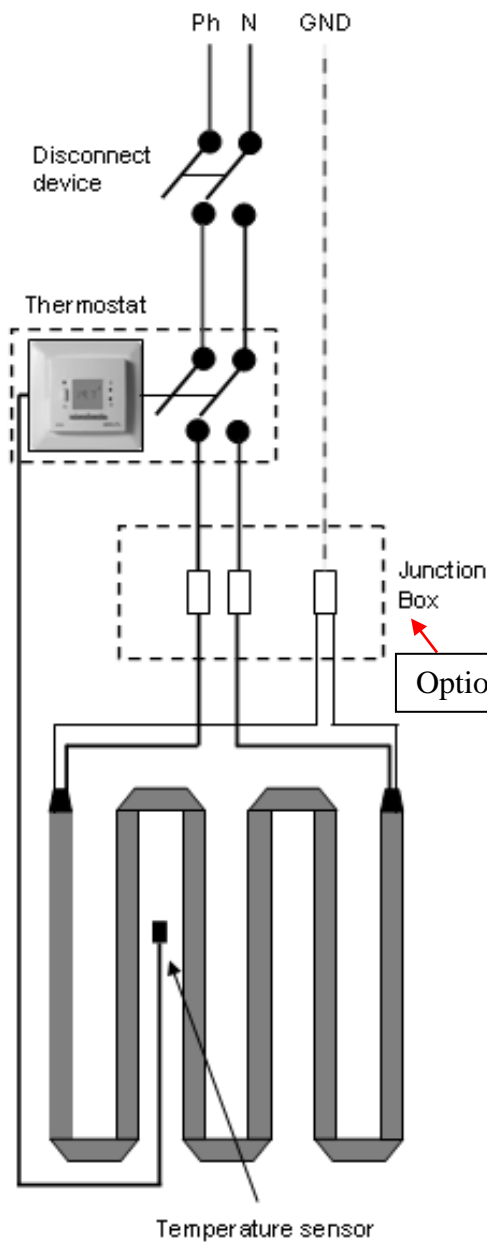
11. When the mats are cool, you may begin to install your floor covering. We suggest you cover the mats with a 3/8 inch thick self-levelling cement. Consult your local floor dealer or manufacturer regarding the right self-levelling material for your type of floor

IMPORTANT!

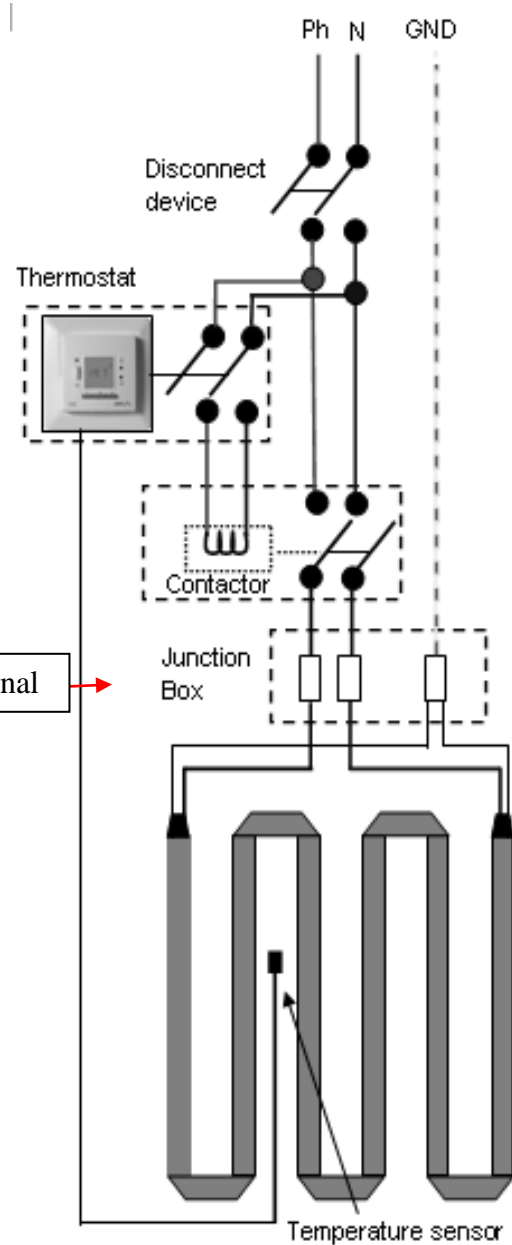
If you are installing a glued type of floor covering, or using thin-set or grout or tile adhesive, do not switch on the heating system again until the glue, thin-set, or grout or tile adhesive is completely dry. Consult the material's manufacturer for the exact required drying time.

Wiring Diagram

Less Than 16 Amp.



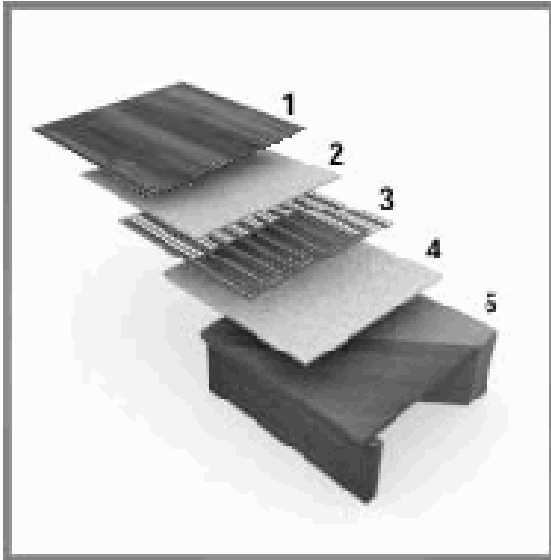
More Than 16 Amp.



Installation Examples

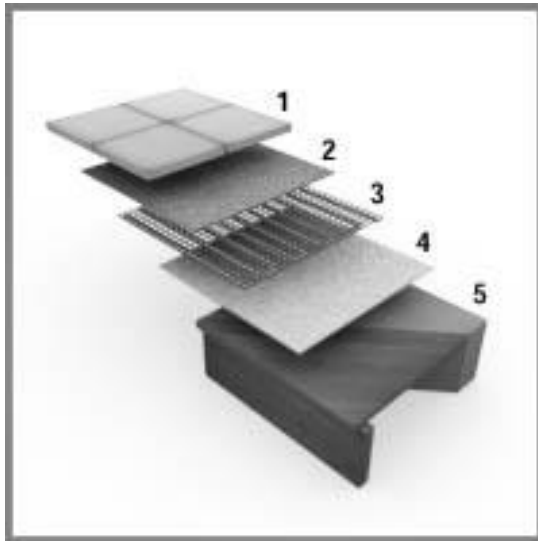
IMPORTANT!

Check your local building codes and regulations and act accordingly should they contradict any of the following examples or instructions.



Under wood, laminate, parquet flooring

1. Wood flooring material
2. Self-leveling concrete or Thin-set/Grout/Tile adhesive
3. Heating mat
4. UL Listed Insulation Material (Optional)
5. Floor slab (concrete / wood)



Under tiles in dry/wet surroundings

1. Tiles
2. Self-leveling concrete or Thin-set/Grout/Tile adhesive
3. Heating mat
4. UL Listed Insulation Material (Optional)
5. Floor slab (concrete / wood)

Sizes of Heating Mats and Values

Ribbon Floor Heating System

Coverage (ft ²)	Voltage	Watts	Amps	Model #
5.0	120	55	0.46	FH5-120
6.7	120	74	0.62	FH6-120
8.3	120	91	0.76	FH8-120
10.0	120	110	0.92	FH10-120
11.7	120	129	1.08	FH12-120
13.3	120	146	1.22	FH13-120
15.0	120	165	1.38	FH15-120
16.7	120	184	1.53	FH17-120
5.0	240	55	0.22	FH5-120
6.7	240	74	0.31	FH6-120
8.3	240	91	0.38	FH8-120
10.0	240	110	0.46	FH10-120
11.7	240	129	0.54	FH12-120
13.3	240	146	0.61	FH13-120
15.0	240	165	0.69	FH15-120
16.7	240	184	0.77	FH17-120

Labels and Markings

1. To be placed in electrical panel adjacent to dedicated breaker

CAUTION
THIS CIRCUIT IS DEDICATED TO A CONCEALED
HEATING SYSTEM. REFER TO INSTALLATION
INSTRUCTIONS WARRANTY CARD.

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Warranty

FloorHeat™ warrants that its FloorHeat™ floor heating mat (referred to in this warranty as “Product”) will be free from defects in material and workmanship for fifteen (15) years after their initial installation. This warranty extends only to the original owner (referred to in this warranty as “Buyer”) of the products and only to Products in their original site of installation.

1. FloorHeat™, at its sole option, will repair or replace any Product covered by this warranty that is proven to be defective in the course of normal and proper use or accept return of such a Product for credit to the Buyer of the purchase price.
The Buyer shall pay the cost of shipping the defective Product to FloorHeat™ if FloorHeat™ requests its return. If FloorHeat™ elects to replace the defective Product, FloorHeat™ shall pay the cost of shipping the replacement Product to the Buyer.
2. The Buyer shall (i) give FloorHeat™ written notice and a detailed description of the alleged defective promptly (and in no event later than 30 days) after discovery of the alleged defect; and (ii) give FloorHeat™ or its authorized representative an opportunity to inspect the Product and its installation before any repair, removal or replacement is carried out. FloorHeat™ shall have a reasonable time (not to exceed 60 days) in which to determine whether or not FloorHeat™ is liable under this warranty and, if liable, to elect whether to repair or replace or accept return of the defective Product.
3. FloorHeat™ has no liability for defects caused by accident, misuse or neglect or by improper installation, repair, or testing. FloorHeat™ has no liability for any costs or expenses associated with the installation or removal of any Product or the installation of any replacement Product or for any inspection, testing or redesign occasioned by any defect or by the repair or replacement of the Product, all of which are the Buyer’s sole responsibility.

This warranty is FloorHeat™'s only obligations and the buyer's exclusive remedies with respect to any defects in products.

4. All other representations, warranties and conditions, whether oral or written, express or implied, statutory or otherwise, including without limitation any implied warranty or condition of merchantability or fitness for a particular purpose or non-infringement, are expressly excluded. In no event, whether as a result of breach of contract, tort liability (including negligence) or otherwise, will FloorHeat™ or any of its directors, officers, employees, agents or representatives be liable for any special, indirect, incidental, exemplary, punitive or consequential damages or for economic loss of use, lost business revenue, lost profits or third party damages.

No employee or representative of FloorHeat™ has any authority to amend this warranty or to assume any additional obligation or liability on FloorHeat's behalf without the written approval of a duly authorized officer of FloorHeat™.

This warranty shall be governed by and construed in accordance with the laws of the state of Michigan. Any provision of this warranty that is prohibited or unenforceable in any jurisdiction will, as to that jurisdiction, be severed from this warranty, without affecting the validity or enforceability in that jurisdiction of the remaining provisions.

Effective: Oct 2014

Contact us at:

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